CLAIMS

1. A method for signal processing for a target detecting device (1) comprising the steps of:

-receiving a return signal (8) from a transmitted first coded pulse (4) by
5   means of a signal processing arrangement (10);

-compressing the return signal (8) in a first compression filter (15) giving rise to a first compressed signal (16a);

-compressing the return signal (8) in a second compression filter (17) parallel to the first compression filter (15) giving rise to a second compressed signal
10   (18), wherein;

-the second compression filter (17) compresses the return signal (8) to a higher degree than the first compression filter (15), wherein a delay ΔT between the first compressed signal (16a) and the second compressed signal (18) arises due to the difference in compression between the first and
15   the second compression filter (15, 17);

-a delay filter (19) delays the first compressed signal (16a) compensating for the delay ΔT;

-a first detector (20) processes the delayed first compressed signal (16b) by forming the squares or absolute value of the delayed first compressed signal
20   (16b), giving rise to a first detector signal (21);

-a second detector (22) processes the second compressed (18) signal by forming the square or absolute value of the second compressed signal (18), giving rise to a second detector signal (23);

-the first detector signal (21) is compared to the second detector signal (23)
25   for all corresponding time frames, and that;

-the minimum value of the compared detector signals (21, 23) is selected for all time frames, giving rise to a first output signal (25) comprising the minimum values from the first and second detector signals (21, 23).

30   2. A method according to claim 1, c h a r a c t e r i z e d i n that the method comprises the step of compressing the return signal (8) in the first

compression filter (15) by means of optimizing the first compression filter (15) to have zero response outside one code length from the main lobe.

3. A method according to any one of the preceding claims, c h a r a c t e r i z e d i n that the method comprises the step of compressing the return signal (8) in the second compression filter (17) by means of optimizing the second compression filter (17) to have low side lobes in the side lobe range (D1) corresponding to the first compression filter (15).

4. A method according to any one of the preceding claims, c h a r a c t e r i z e d i n that method comprises the step of compressing the return signal (8) in the first compression filter (15) by means of the first compression filter (15) having a length corresponding to the length of the transmitted coded pulse.

5. A method according to any one of the preceding claims, c h a r a c t e r i z e d i n that the method comprises the step of compressing the return signal (8) in the second compression filter (17) by means of the second compression filter (17) having a length at least three times the length of the first compression filter (15).

6. A method according to any one of the preceding claims, c h a r a c t e r i z e d i n that the selections of the minimum value for comparing the detector signals (21, 23) for all time frames, is stored as a sequence of selections.

7. A method according to claim 6, c h a r a c t e r i z e d i n that method comprises the step of the stored sequence of selections being used when processing a return signal from a second coded pulse following the first coded pulse (4), such that the sequence of selections determines which of the first or the second detector signal from the second coded pulse is selected and thereby giving rise to a second output signal.

8. A method according to claim 7, c h a r a c t e r i z e d i n that the method comprises the step of processing the first output signal (25) and the second output signal as coherent signals in order to suppress clutter.

9. A method according to any one of the preceding claims, c h a r a c t e r i z e d i n that the method comprises the step of transmitting the first transmitted first coded pulse (4).

10. A signal processing arrangement (10) for a target detecting device (1) comprising:

-means (35) for receiving a return signal (8) from a transmitted first coded pulse (4);

- a first compression filter (15) arranged for compressing the return signal (8) and giving rise to a first compressed signal (16a);

-a second compression filter (17) parallel to the first compression filter (15) arranged for compressing the return signal (8) giving rise to a second compressed signal (18);

c h a r a c t e r i z e d i n that the second compression filter (17) is arranged to compress the return signal (8) to a higher degree than the first compression filter (15), wherein a delay ΔT between the first compressed signal (16a) and the second compression signal (18) arises due to the difference in compression between the first and the second filter (15, 17), wherein;

-a delay filter (19) is arranged to delay the first compressed signal (16a) compensating for the delay ΔT;

-a first detector (20) is arranged to process the delayed first compressed signal (16b) by forming the squares or absolute value of the first compressed signal, giving rise to a first detector signal (21);

-a second detector (22) is arranged to process the second compressed signal (18) by forming the square or absolute value of the second

compressed signal (18), giving rise to a second detector signal (23), and wherein;

-a comparison device (24) is arranged to compare the first detector signal (21) to the second detector signal (23) for all corresponding time frames, and

5   that;

-the comparison device (24) is arranged to select the minimum value of the compared detector signals (21, 23) for all time frames, giving rise to a first output signal (25) comprising the minimum values from the first and second detector signals (21, 23).

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11. A signal processing arrangement (10) according to claim 10, c h a r a c t e r i z e d i n that the first compression filter (15) is optimized such that the first compression filter (15) has zero response outside one code length from the main lobe.

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12. A signal processing arrangement (10) according to any one of claims 10- 11, c h a r a c t e r i z e d i n that the second compression filter (17) is optimized for low side lobes in the side lobe range (D1) corresponding to the first compression filter (15).

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13. A signal processing arrangement (10) according to any one of claims 10- 12, c h a r a c t e r i z e d i n that the length of the first compression filter (15) corresponds to the length of the transmitted first coded pulse.

25   14. A signal processing arrangement (10) according to any one of claims 10- 13, c h a r a c t e r i z e d i n that the length of the second compression (17) filter is at least three times the length of the first compression filter (15).

15. A signal processing arrangement (10) according to any one of claims 10-

30   14, c h a r a c t e r i z e d i n that a memory device (26) is arranged to store the selections made selecting the minimum value for comparing the detector signals (21, 23) for all time frames, as a sequence of selections.

16. A signal processing arrangement (10) according to claim 15, c h a r a c t e r i z e d   i n that a control device (27) is arranged to use the stored sequence of selections when processing a return signal from a second coded pulse following the first coded pulse (4), by controlling the comparison device (24) such that the first or the second detector signal (21, 23) from the second coded pulse is selected on basis of the sequence of selections, thereby giving rise to a second output signal.

17. A signal processing arrangement (10) according to claim 16, c h a r a c t e r i z e d   i n that a clutter suppressing device (28) processes the first output signal (25) and the second output signal as coherent signals in order to suppress clutter, for example by Doppler filtering.

18. A signal processing arrangement according to claim 17, c h a r a c t e r i z e d   i n that the arrangement comprises means (3) for transmitting the first coded pulse (4).